$$a = \frac{E_2 - E_1}{u_{AB}^2 - u_{AB_1}^2} = \frac{0 - 162.10^{-6}}{81 - 0} = -2.10^{-6} J.V^{-2}$$

$C = -2a = -2\,(-2).10^{-6} = 4.10^{-6} F$

$U_{AB_{max}} = E \Rightarrow U^2_{AB_{max}} = E^2 = 81 \Rightarrow E = 9V$ ou bien

$$b = \frac{1}{2} CE^2 \Rightarrow E = \sqrt{\frac{2b}{C}} = \sqrt{\frac{2 \times 162.10^{-6}}{4.10\text{-}6}} = 9V$$

c.

$$q(t) = Q_{max} \sin(\omega_0 t + \varphi)$$

$$\omega_0 = \sqrt{\frac{1}{LC}} = \sqrt{\frac{1}{0,01 \times 4.10^{-6}}} = 5.10^3 rad.s^{-1}$$

$Q_m = Q_m = CE = C(U_C)_{max} = 4.10^{-6} \times 9 = 36.10^{-6} C$

à t=0, $q_0 = Q_0 = Q_m$

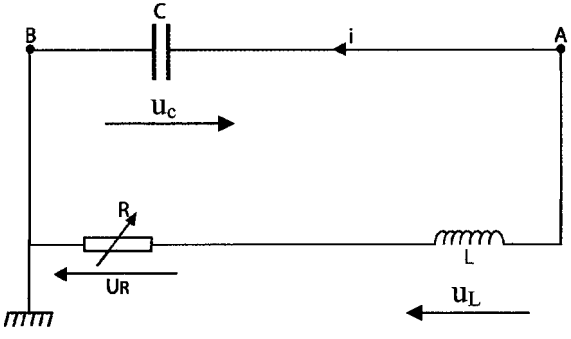
$$q_0 = Q_m \sin\varphi = Q_m \Rightarrow \sin\varphi = 1 \Rightarrow \varphi = \frac{\pi}{2} rad$$

$$q(t) = 36.10^{-6} \sin(5.10^3 t + \frac{\pi}{2})$$

*$u = U_{max} \sin(\omega_0 t + \varphi_C)$ $\varphi_{U_C} = \varphi_q$

q(t) et u_C (t) sont en phase.

$$U_{C_{max}} = \frac{Q_0}{C} = E = 9V$$

$$u_C(t) = 9\sin(5.10^3 t + \frac{\pi}{2})$$

III-